with silica either as a silicate or as alkaline aurosilicate. The phenomena, he thinks, demand a single solution from which gold and silica may be precipitated simultaneously.—W. G. **Holford**: Some features in the mining problems of the eastern Witwatersrand area. This paper is a general review of the more intricate geological problems associated with mining in the particular area referred to, where conditions are somewhat different from those met with in the central Rand. For example, while it is found on the central Rand that the close proximity of the zones in which economic gold values are contained are in such close proximity as almost to constitute defined shoots, on the eastern rand the zones are less frequent and are of greater economic value in the synclinal portions of the areas. The author goes on to describe in detail the various features of mining practice in the district under consideration, dealing respectively with mining areas, shaft sinking, initial development, the mechanical equipment, and the labour problems encountered. Incidentally he makes a strong argument in favour of circular as against rectangular shafts.—W. B. **Middleton**: Prospecting tin land in Malaya. This is a practical paper concerning itself with the alluvial deposits which are the principal source of the tin production of the Malay Peninsula. The author gives full particulars of the various methods employed in treating, prospecting, and sampling the ground, including an elaborate description of the tools required, and as an appendix he furnishes a set of tables for calculations and conversions in connection with the work, which should prove of great utility.

CAMBRIDGE.

Philosophical Society, February 8.—Dr. Barnes, vice-president, in the chair.—Sir J. J. **Thomson**: Theory of the mobility of negative ions.—Dr. G. F. C. **Searle**: (1) The determination of the focal length of a thick mirror. (2) Experiment on the focal lines formed by refraction at a plane surface. (3) Calculation of the electrical resistance of a certain network of conductors.—C. T. R. **Wilson**: A method of measuring the thickness of thin plates. The method is a modification of that of Macé de Lépinay and Buisson in which μe, the product of refractive index and thickness, is obtained by measurements of the thin-plate fringes and $(\mu-1)e$ by observing the retardation produced by the plate when inserted in the path of a beam of light.—G. W. **White**: Investigation of the "wolf-note" in bowed stringed instruments. With all stringed instruments of the violin type a pitch can be found at which it is difficult and often impossible to obtain a pure steady tone. In the preliminary experiments to investigate this imperfect note photographs were obtained of the belly vibration of a 'cello by reflecting a beam of light from an optical lever to a moving photographic plate. A series of notes through the "wolf-note" played with a constant bow pressure was studied. At the "wolf-note" the vibration curve had an extremely big amplitude and showed that the unsteady nature of the tone was due to a "beating" of the instrument belly. The experiments proved conclusively that the "wolf-note" was caused by the impressed string pitch coinciding with the pitch of best resonance of the instrument.

MANCHESTER.

Literary and Philosophical Society, January 26.—Mr. F. Nicholson, president, in the chair. W. C. **Jenkins**: Manchester fogs of the last ten years. A comparison of the fogs in Manchester during 1904–1913 inclusive showed that the number of days affected by this phenomenon has increased during the latter years by at least 30 per cent. as compared with the earlier years of this period. By a rearrangement of the figures into seasonal effects the most striking feature is the increase of days classified as "gloomy" during the summer months, the number during the winter months of October to March remaining fairly constant. The number of days affected by "gloom" increased 100 per cent. during the period of the last four years as compared with the number so classified in the first four years of the period under consideration. These fog glooms are situated close to the earth's surface, as is shown by a comparison of sunshine records taken from the roof of the School of Technology and on the ground, the hours of sunshine measured on the ground being approximately 10 per cent. less than the amount recorded from the roof (100 feet higher).—Prof. W. W. Haldane **Gee**: Note on the monthly variation of sunshine. As a result of his examination of the Campbell-Stokes records, the author found that the average percentage of the possible sunshine usually reaches a maximum in May. A number of examples of this law were quoted. It was true for Glasgow, Douglas (I. of M.), Llandudno and Stonyhurst, 1880–1885; for St. Aubins (Jersey), 1880–1885; Blackpool, 1882–1885; Buxton, 1881–1885; Durham, 1880–1884; and for the Godlee Observatory (Manchester School of Technology), 1906–1910. The records for Stonyhurst for the thirty-three years from 1880–1912 also show the maximum in May. For 1910, Manchester (Oldham Road), Manchester (Whitworth Park), Buxton, Blackpool, and Llandudno also show the maximum in May. The author thought that the sunlight in May must have an important influence on vegetable growth.—W. C. **Jenkins**: Weather repetitions, with suggestions for long-distance forecast. Attention was directed to the repetitions in the weather for periods of twelve hours, twenty-four hours, seven days, and the lunar month, and also annual repetitions, making certain allowances—using particularly the records of rainfall. With the view of establishing these repetitions to a definite origin, the author showed the connection between numerous cyclonic paths and extra terrestrial phenomena, and assuming similar forces acting in temperate latitudes, he proceeded to demonstrate that cyclonic movements in the regions of this kingdom followed very much the variations expected under these conditions.

BOOKS RECEIVED.

Breeding of Farm Animals. By Prof. M. W. Harper. Pp. xvii+335. (New York: Orange Judd Co.; London: Kegan Paul and Co., Ltd.) 1.50 dollars.

Practical Physical Chemistry. By Prof. A. Findlay. Third edition. Pp. xvi+327. (London: Longmans and Co.) 4*s.* 6*d.* net.

A Summer on the Yenesei (1914). By M. D. Haviland. Pp. xi+328. (London: E. Arnold.) 10*s.* 6*d.* net.

Board of Education. Examinations in Science and Technology, 1914. Examination Papers and Reports of Examiners. Pp. 142. (London: H.M.S.O.; Wyman and Sons, Ltd.) 9*d.*

Alone in the Sleeping Sickness Country. By Dr. F. Oswald. Pp. xii+219. (London: Kegan Paul and Co., Ltd.) 8*s.* 6*d.* net.

Arabia Infelix, or, the Turks in Yamen. By G. W. Bury. Pp. x+213. (London: Macmillan and Co., Ltd.) 7*s.* 6*d.* net.

The Chemistry of Petroleum and its Substitutes. By Drs. C. K. Tinkler and F. Challenger. Pp. xvi+352. (London: Crosby Lockwood and Son.) 10*s.* 6*d.* net.

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Journal Kept by David Douglas during his Travels in North America, 1823–1827, etc., with appendices containing a List of the Plants introduced by Douglas, and an account of his death in 1834. Pp. 364. (London: W. Wesley and Son.) 21*s*. net.

Summary Report of the Geological Survey, Department of Mines, for the Calendar Year 1913. Pp. 417. (Ottawa: J. de L. Tache.)

Icones of the Plants of Formosa, and Materials for a Flora of the Island. By B. Hayata. Vol. iv. Pp. vi+264+plates xxxv. (Taihoku: Government of Formosa.)

British Museum (Natural History). British Antarctic (*Terra Nova*) Expedition. 1910. Natural History Report. Zoology, vol. ii., No. 2, Oligochaeta. By H. A. Baylis. Pp. 13–18. Zoology, vol. ii., No. 3, Parasitic Worms, with a Note on a Free-living Nematode. By Dr. R. T. Leiper and Surgeon E. L. Atkinson. Pp. 19–60. (London: British Museum (Natural History); Longmans and Co.) 1*s*. and 1*s*. 6*d*. respectively.

The Chemistry of Colloids and some Technical Applications. By Dr. W. W. Taylor. Pp. viii+328. (London: E. Arnold.) 7*s*. 6*d*. net.

Forest Valuation. By Prof. H. H. Chapman. Pp. xvi+310. (New York: J. Wiley and Sons, Inc.; London: Chapman and Hall, Ltd.) 8*s*. 6*d*. net.

X rays and Crystal Structure. By Prof. W. H. Bragg and W. L. Bragg. Pp. vii+228. (London: G. Bell and Sons, Ltd.) 7*s*. 6*d*. net.

DIARY OF SOCIETIES.

THURSDAY, February 25.

Royal Society, at 4.30.—The Effect of the Depth of Pulmonary Ventilation on the Oxygen in the Venous Blood of Man: Prof. L. Hill and J. F. Twort.—The Effect of Functional Activity upon the Metabolism, Blood Flow and Exudation in Organs: J. Barcroft and Toyojiro Kato.—The Osmotic Balance of Skeletal Muscle: Miss D. Jordan Lloyd and W. B. Hardy.—The Function of Chlorophyll: Dr. A. J. Ewart.—Contributions to the Study of the Bionomics and Reproductive Processes of the Foraminifera: E. Heron-Allen.—The Influence of the Hydrogen Concentration upon the Optimum Temperature of a Ferment: A. Compton.

Royal Institution, at 3.—Struggle of Nations: Dr. P. Chalmers Mitchell.

Child Study Society, at 6.—*Discussion:* The Care and Development of the Child—from Ante-Natal Period to Five Years of Age. Ante-Natal Period: Dr. G. Eric Pritchard; Infancy: Miss J. Halford; One to Five Years: Dr. D. Forsyth.

Institution of Electrical Engineers, at 8.—Electricity applied to Mining: C. P. Sparks.

FRIDAY, February 26.

Royal Institution, at 9.—Solar Eclipse of 1914: The Rev. A. L. Cortie.

Physical Society, at 5.—Magnetic "Character" Figures. Antarctic and International: Dr. C. Chree.—The Electrification of Surfaces as Affected by Heat: Dr. P. E. Shaw.—Electromagnetic Inertia and Atomic Weight: Prof. J. W. Nicholson.

SATURDAY, February 27.

Royal Institution, at 3.—Recent Researches on Atoms and Ions: Sir J. J. Thomson.

Essex Field Club (at the Essex Museum, Stratford), at 6.—Incisor-teeth of Rhinoceros: E. T. Newton.—Palæolithic Implements and Plant Seeds from the River Gravel at Hackney Wick in the Lea Valley: A. Wrigley.—The New Witches-Broom on the Crack Willow: Miller Christy.—East Anglian Gravels: W. H. Dalton.

MONDAY, March 1.

Society of Chemical Industry, at 8.

Aristotelian Society, at 8.—The Æsthetic of Benedetto Croce: A. A. Cock.

Victoria Institute, at 4.30.—The Spectra of Stars and Nebulæ: Prof. A. Fowler.

Royal Society of Arts, at 8.—Motor Fuels: Prof. Vivian B. Lewes.

Society of Engineers, at 7.30.—Running Costs of Motor Vehicles: Lieut. R. W. A. Brewer.

TUESDAY, March 2.

Royal Institution, at 3.—Photographic Appreciation of Colour in Monochrome: Prof. W. J. Pope.

Royal Society of Arts, at 4.30.—The Northern Territory of Australia: Past, Present, and Future: D. Lindsay.

Röntgen Society, at 8.15.—The Chemistry of the Radio Elements: A. Fleck.

WEDNESDAY, March 3.

Society of Public Analysts, at 8.—The Soluble Chlorides and Total Chlorine in some English Cokes; S. W. Bridge.—The Routine Detection and Estimation of Boric Acid in Butter: H. Hawley.—The Structure of Pepper—Some New Features: T. E. Wallis.—The Occurrence of Chlorine in Coal: A. de Waele.

Institution of Electrical Engineers (Students' Section), at 7.45.—The Application of Electrical Engineering to Warfare—Communications, Wireless, etc.: P. R. Coursey; The Laying and Firing of Mines: S. G. Killingback; Searchlights and Projectors: E. L. M. Emtage.

Royal Society of Arts, at 4.30.—Shakespeare's Profession: W. Poel.

Entomological Society, at 8.

THURSDAY, March 4.

Royal Society, at 4.30.—*Probable Papers:* A Bolometric Method of Determining the Efficiency of Radiating Bodies: Prof. W. A. Bone, Prof. H. L. Callendar, and H. J. Yates.—The Simplification of the Arithmetical Processes of Involution and Evolution: E. Chappell.—The Elastic Properties of Steel at Moderately High Temperatures: F. E. Rowett.

Royal Institution, at 3.—Poetry and War: Sir Herbert Warren.

Royal Geographical Society, at 5.—Suess's Classification of the Eurasian Mountains: Prof. J. W. Gregory.

FRIDAY, March 5.

Royal Institution, at 9.—Mimicry and Butterflies: Prof. E. B. Poulton.

Geologists' Association, at 8.—Geology of the Glasgow District: Prof. J. W. Gregory.

SATURDAY, March 6.

Royal Institution, at 3.—Recent Researches on Atoms and Ions: Sir J. J. Thomson.

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Editorial and Publishing Offices:
MACMILLAN & CO., Ltd.,
ST. MARTIN'S STREET, LONDON, W.C.

Advertisements and business letters to be addressed to the Publishers.
Editorial Communications to the Editor.

Telephone Number: Gerrard 8830.
Telegraphic Address: Phusis, London.

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